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REMARKS

Claims 1, 2, 5-23, 25 and 26 are all of the claims presently pending in the application. Claim 24 has been canceled without prejudice or disclaimer. Claim 1 has been amended to more particularly define the claimed invention. Claim 16 has been merely editorially amended.

Entry of this Amendment is believed proper since no new issues are being presented to the Examiner that would require further search and/or consideration.

Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claim 13 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claims 1-2, 5-11, 13-15, 17, 19, and 22-26 stand rejected under 35 U.S.C. §102(b) as being anticipated by Kamata et al. (U.S. Pub. No. 2002-0142192; hereinafter “Kamata”). Claim 12 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kamata in view of Ning et al. (U.S. Pub. No. 2002-0098676; hereinafter Ning). Claim 16 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kamata in view of Baglin et al. (U.S. Pat. No. 6,331,364; hereinafter “Baglin”). Claim 18 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kamata. Claims 20-21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kamata in view of Chen et al. (U.S. Pat. No. 6,165,803; hereinafter “Chen”).

These rejections are respectfully traversed in the following discussion.

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### I. THE CLAIMED INVENTION

The claimed invention of exemplary claim 1 is directed to a method of patterning a magnetic thin film. The method includes transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical transformation, wherein the reactive plasma includes O<sub>2</sub> and a fluorine-containing gas.

### II. THE INDEFINITENESS REJECTION

Claim 13 stands rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite.

Applicants submit that the Examiner is clearly incorrect.

That is, the Examiner inquires “[w]hat is the difference between the magnetic device produced by claim 1 and that of claim 13?” (see Office Action dated August 3, 2006 at page 3).

Applicants respectfully submit (as previously argued by Applicants in the Response filed on December 28, 2005) that claim 1 does not recite “producing a magnetic device”. Indeed, claim 1 clearly recites “a method of patterning a magnetic thin film”. Claim 13 further limits the subject matter of claim 1 by claiming the additional step of producing a magnetic device after the limitation of “transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical formation”. A person reasonably skilled in the art would clearly understand what is meant by the phrase “producing a magnetic device” and that “producing a magnetic device” is clearly different from “transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical formation”.

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In the Response to Arguments section of the Office Action (see Office Action at page 9), the Examiner inquires “[w]hat is the magnetic device that is differed from the device formed in claim 1?”.

Applicants have pointed out several times that claim 1 does not recite “producing a magnetic device”. Indeed, claim 1 clearly recites “a method of patterning a magnetic thin film”. Claim 1 does not produce a magnetic device.

Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

### III. THE PRIOR ART BASED REJECTIONS

#### A. The Kamata Reference

Claims 1, 2, 5-11, 13-15, 17, 19 and 22-26 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kamata. Additionally, claim 18 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata. Applicants submit, however, that there are features of the claimed invention that are not taught or suggested by Kamata.

That is, Kamata does not teach or suggest “*wherein said reactive plasma includes O<sub>2</sub> and a fluorine-containing gas*”, as recited in exemplary claim 1.

Indeed, Applicants submit that the Examiner has not even alleged that Kamata teaches or suggests this feature of the claimed invention. Furthermore, the Examiner has not even addressed this feature of the claimed invention.

That is, Applicants point out that this feature of the claimed invention was previously recited in dependent claim 24. In his rejection of claim 24, the Examiner

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alleged that "the reactive plasma of Kamata includes a fluorine-containing gas" (see Office Action dated August 3, 2006 at page 5).

However, claim 24 (and now independent claim 1) clearly recited that the reactive plasma includes O<sub>2</sub> and a fluorine-containing gas. That is, Kamata must teach both elements of the reactive plasma.

Applicants submit that since the Examiner has failed to consider this feature of the claimed invention, the Examiner has clearly failed to establish a *prima facie* case of anticipation.

Moreover, Applicants submit that this feature of the claimed invention is not taught or suggested by Kamata. That is, nowhere does Kamata teach or suggest that the reactive plasma includes a fluorine-containing gas and O<sub>2</sub>. Indeed, Kamata merely teaches a reaction gas containing halogen (see Kamata at column 8, lines 48-50).

Therefore, Applicants submit that there are features of the claimed invention that are not taught or suggested by Kamata. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### **B. The Ning Reference**

The Examiner alleges that Ning would have been combined with Kamata to teach the claimed invention of claim 12. Applicants submit, however, that these references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

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That is, as detailed in section A, above, Kamata does not teach or suggest "*wherein said reactive plasma includes O<sub>2</sub> and a fluorine-containing gas*", as recited in exemplary claim 1.

Furthermore, Applicants submit that Ning fails to make up the deficiencies of Kamata. Indeed, the Examiner does not even allege that Ning teaches or suggests transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical transformation. Indeed, the Examiner merely relies upon Ning as teaching providing a mask for patterning.

That is, the Examiner alleges that "Ning teaches utilizing photolithography to provide a mask including TaN, TiN (244) for patterning" (see Office Action dated August 3, 2006 at page 6). The Examiner, however, has not provided a motivation or suggestion to combine this feature of Ning with Kamata.

Applicants submit "[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." (§ 2143, Emphasis added).

The Examiner has not provided a motivation or suggestion to combine the teachings of the prior art references. That is, the Examiner merely alleges "it would have been obvious to one having ordinary skill in the art at the time of invention to provide a hard mask of Kamata including a TiN and TaN as taught by Ning for patterning over the portion of the magnetic thin film" (see Office Action dated August 3, 2006 at page 6).

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The Examiner fails to recognize that there mere disclosure of features in applied references is *prima facie* insufficient to maintain an obviousness rejection. Rather, the Examiner appears to ignore and, indeed, has failed to provide any teaching, suggestion or motivation for making the alleged modification.

*"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination"* (emphasis in MPEP itself).

Along these lines, Judge Rader wrote in the recent Federal Circuit Court of Appeals holding in *Ruiz v. A.B. Chance Co.*, Federal Cir., No. 03-1333, January 29, 2004:

*"In making the assessment of differences, section 103 specifically requires consideration of the claimed invention "as a whole." Inventions typically are new combinations of existing principles or features. *Envil. Designs, Ltd v. Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983) (noting that "virtually all [inventions] are combinations of old elements."). The "as a whole" instruction in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might break an invention into its component parts (A + B + C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - often the very definition of invention."*

Although the holding in that case left undisturbed, under the "clear error" standard of review, the conclusion of the District Court that the prior art references were properly combinable, it specifically explained that it declined to reverse this conclusion because "... the two references address precisely the same problem ..." (emphasis by Applicants)

This aspect of the *Ruiz* holding, in which precisely the same problem is being addressed by both references, is not present in Ning and Karnata, used in the prior art evaluation of the present Application.

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Therefore, the Examiner has clearly failed to establish a *prima facie* case of obviousness.

Thus, Ning fails to make up the deficiencies of Kamata.

Therefore, Applicants submit that these references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### **C. The Baglin Reference**

The Examiner alleges Baglin would have been combined with Kamata to teach the claimed invention of claim 16. Applicants submit, however, that these references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

That is, as detailed in section A, above, Kamata does not teach or suggest "*wherein said reactive plasma includes O<sub>2</sub> and a fluorine-containing gas*", as recited in exemplary claim 1.

Furthermore, Applicants submit that Baglin fails to make up the deficiencies of Kamata. Indeed, the Examiner does not even allege that Baglin teaches or suggests transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical transformation. Indeed, the Examiner merely relies upon

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Baglin as teaching other ion species that may be used for converting a magnetic thin film including argon.

Applicants submit “[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.” (§ 2143, Emphasis added).

The Examiner has not provided a motivation or suggestion to combine the teachings of the prior art references. That is, the Examiner merely alleges “it would have been obvious to one having ordinary skill in the art at the time of invention was made to convert a portion of the magnetic thin film of Kamata utilizing argon plasma as taught by Baglin to achieve the desired chemical conversion ” (see Office Action dated August 3, 2006 at page 7).

The Examiner fails to recognize that there mere disclosure of features in applied references is *prima facie* insufficient to maintain an obviousness rejection. Rather, the Examiner appears to ignore and, indeed, has failed to provide any teaching, suggestion or motivation for making the alleged modification.

Therefore, the Examiner has clearly failed to establish a *prima facie* case of obviousness.

Thus, Baglin fails to make up the deficiencies of Kamata.

Therefore, Applicants submit that these references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

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Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### D. The Chen Reference

The Examiner alleges that Chen would have been combined with Kamata to teach the claimed invention of claims 20 and 21. Applicants submit, however, that these references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

That is, as detailed in section A, above, Kamata does not teach or suggest “*wherein said reactive plasma includes O<sub>2</sub> and a fluorine-containing gas*”, as recited in exemplary claim 1.

Furthermore, Applicants submit that Chen fails to make up the deficiencies of Kamata. Indeed, the Examiner does not even allege that Baglin teaches or suggests transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical transformation. Indeed, the Examiner merely relies upon Chen as teaching further process steps.

Applicants submit “[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.” (§ 2143, Emphasis added).

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The Examiner has not provided a motivation or suggestion to combine the teachings of the prior art references. That is, the Examiner merely alleges "it would have been obvious to one having ordinary skill in the art at the time of invention was made to further process the converted magnetic thin film of Kamata utilizing the further process step as taught by Chen to form the MTJ device " (see Office Action dated August 3, 2006 at page 8).

The Examiner fails to recognize that mere disclosure of features in applied references is *prima facie* insufficient to maintain an obviousness rejection. Rather, the Examiner appears to ignore and, indeed, has failed to provide any teaching, suggestion or motivation for making the alleged modification.

Therefore, the Examiner has clearly failed to establish a *prima facie* case of obviousness.

Thus, Chen fails to make up the deficiencies of Kamata.

Therefore, Applicants submit that these references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### IV. FORMAL MATTERS AND CONCLUSION

In accordance with the Examiner's objection to the claims, the claims have been amended. Specifically, the term "converting" has been replaced with the term "transforming" as provided in the complete listing of claims above.

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However, regarding the Examiner's objection to claim 13, as being of improper dependent form, the Examiner is clearly incorrect. ". Indeed, claim 1 clearly recites "a method of patterning a magnetic thin film". Claim 13 further limits the subject matter of claim 1 by claiming the additional step of producing a magnetic device after the limitation of "transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical formation". A person reasonably skilled in the art would clearly understand what is meant by the phrase "producing a magnetic device" and that "producing a magnetic device" is clearly different from "transforming a portion of the magnetic thin film to be non-magnetic and electrically insulating using a chemical formation". Therefore, claim 13 clearly further limits the subject matter of claim 1 and therefore is clearly in proper dependent form.

In view of the foregoing, Applicants submit that claims 1, 2, 5-23, 25 and 26, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

  
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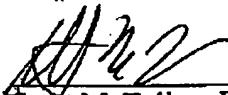
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**FACSIMILE TRANSMISSION**

I hereby certify that I am filing this paper via facsimile, to Group Art Unit 28144, at (571) 273-8300, on October 3, 2006.

Respectfully Submitted,

Date: October 3, 2006

  
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